

# Chapter 1

## **Introduction and Purpose of the Lake Superior Lakewide Management Plan**



North Shore beach of Lake Superior, Lake Superior, MN  
Photograph by: Dave Hansen, Minnesota Extension Service

Lake Superior Lakewide Management Plan  
2000

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## Chapter 1

# Introduction and Purpose of the Lake Superior Lakewide Management Plan

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## 1.0 INTRODUCTION

The Lake Superior basin is one of the most pristine and unique ecosystems in North America. Containing the largest surface area of any freshwater lake in the world, Lake Superior has some of the most breathtaking scenery in the Great Lakes, serving as a backdrop to a wide range of recreational and outdoor activities enjoyed by people from all over the world. Sparsely populated even today, Lake Superior has not experienced the same level of development, urbanization or pollution as the other Great Lakes. Recognizing this unique and invaluable resource, the federal, state and provincial, and U.S. tribal governments; First Nations; environmental groups, industry; and the public have taken steps to protect this great legacy for generations to come. This shared partnership has served as a model the world over for cooperative binational resource management.

The Great Lakes Water Quality Agreement (GLWQA) between the U.S. and Canada commits the two countries (the Parties) to address the water quality issues of the Great Lakes in a coordinated fashion. Annex 2 of the GLWQA provides a framework for the reduction of critical pollutants as they relate to impaired beneficial uses of open lake waters. In undertaking Lakewide Management Plans the Parties agree to build upon cooperative efforts with state and provincial governments and to ensure that the public is consulted. The Parties, partner agencies, and U.S. tribal/First Nations also recognize the need to develop LaMP documents for other elements of the Lake Superior ecosystem. These include Human Health, Habitat, Terrestrial Wildlife Communities, Aquatic Communities, and Developing Sustainability.

## 1.1 THE LAKE SUPERIOR BINATIONAL PROGRAM

In 1990, the fifth biennial report of the International Joint Commission (IJC) to the U.S. and Canadian governments recommended that Lake Superior be designated as a demonstration area where “no point source discharge of any persistent toxic substance will be permitted.” In response, on September 30, 1991, the federal governments of Canada and the U.S., the Province of Ontario, and the States of Michigan, Minnesota, and Wisconsin announced a **Binational Program to Restore and Protect Lake Superior**. Known as the Lake Superior Binational Program (LSBP), the Program identifies two major areas of activity:

- A Zero Discharge Demonstration Project
- The Broader Program

The LSBP also recognizes that public participation is an important part of the program.

The Zero Discharge Demonstration Program established Lake Superior as a demonstration project to achieve zero discharge and zero emission of nine toxic, persistent, and bioaccumulative chemicals: mercury, total polychlorinated biphenyls (PCBs), dieldrin/aldrin, chlordane, DDT, toxaphene, 2,3,7,8-TCDD (dioxin), hexachlorobenzene (HCB) and octachlorostyrene (OCS). Voluntary pollution prevention is the preferred approach to achieving reduction goals, but enhanced controls and regulations might be necessary to achieve zero discharge.

The Broader Program recognizes that zero discharge of persistent toxic substances alone will not be sufficient to restore and protect Lake Superior. The Broader Program focuses on the coordination needed among the many resource and environmental agencies.

Public Involvement is also emphasized by the Binational Program. The LSBP highlights the importance of the partnership approach to achieving specified, mutually-desired goals. The Program encourages the commitment of all partners to develop new and innovative approaches to ecosystem management. The citizens of the basin are partners and stakeholders in the Binational Program.

## **LSBP Organization**

### Lake Superior Task Force

The Task Force consists of senior Canada and U.S. federal, provincial, and state representatives and tribal members who make management decisions related to Lake Superior. The Task Force serves as a steering committee and is responsible for program direction.

### Superior Work Group

The Work Group is comprised of Canadian and U.S. technical experts who represent various agencies and organizations that manage Lake Superior water and other resources. The Work Group reports to the Task Force. The Work Group is comprised of seven committees: critical pollutants, habitat, aquatic communities, terrestrial wildlife communities, developing sustainability, human health and public involvement. These committees address pollution prevention and reduction, habitat issues, aquatic and terrestrial community diversity and sustainability, special designations, ecosystem integrity and monitoring, human use and health issues, and public communication and involvement.

### Lake Superior Binational Forum

The Forum is a group of 24 Lake Superior citizen volunteers who make recommendations to the governments and provide governments with additional advice and input. Forum members bring perspectives from a variety of community sectors including business,

environmental groups, academia and industry. The vision statement endorsed in 1992 by the Forum is also a philosophical backdrop for the Binational Program.

### **A VISION FOR LAKE SUPERIOR**

#### **As citizens of Lake Superior, we believe...**

*that water is life and the quality of water determines the quality of life.*

#### **We seek a Lake Superior watershed ...**

*that is a clean, safe environment where diverse life forms exist in harmony; where the environment can support and sustain economic development and where the citizens are committed to regional cooperation and personal philosophy of stewardship;*

*that is free of toxic substances that threaten fish, wildlife and human health; where people can drink the water or eat the fish anywhere in the lake without restrictions;*

*where wild shorelines and islands are maintained and where development is well planned, visually pleasing, biologically sound, and conducted in an environmentally benign manner;*

*which recognizes that environmental integrity provides the foundation for a healthy economy and that the ingenuity which results from clean, innovative and preventive management and technology can provide for economic transformation of the region;*

*where citizens accept the personal responsibility and challenge of pollution prevention in their own lives and lifestyles and are committed to moving from a consumer society to a conserver society; and*

*where there is greater cooperation, leadership and responsibility among citizens of the basin for defining long-term policies and procedures which will protect the quality and supply of water in Lake Superior for future generations.*

*We believe that by effectively addressing the issues of multiple resource management in Lake Superior, the world's largest lake can serve as a worldwide model for resource management.*

*Endorsed by the Lake Superior Binational Forum on January 31, 1992  
as an expression of the hearts and minds of all of us.*

This vision statement expresses the commitment and desire of members of the Lake Superior community to foster a healthy, clean, and safe Lake Superior ecosystem. It reflects the diverse pathways and mechanisms by which humans and nature interact within land and water ecosystems, and challenges the inhabitants of the Lake Superior watershed to accept personal responsibility for protecting the Lake and the landscape that sustains it. The vision statement specifies broad, powerful objectives for the Lake Superior ecosystem, in plain language.

### 1.1.1 LaMP Documents Produced To Date

Historically, formal LaMP “stages” were to be submitted to the IJC when a key stage of work was completed, in accordance with the framework outlined in Annex 2 of the 1987 amendments to the GLWQA:

- Stage 1: When problem definition is complete and critical pollutants are identified;
- Stage 2: When chemical load reduction schedules are completed;
- Stage 3: When remedial measures have been selected: and
- Stage 4: When monitoring indicates that the contribution of critical pollutants to impaired beneficial uses has been eliminated.

LaMP Stages 1 and 2 have been completed for the chemical portion of the Lake Superior LaMP. A Draft Stage 3 was released for public comment in November 1999.

The Lake Superior Stage 1 LaMP which was submitted to the IJC in September 1995, used environmental data to identify 22 critical pollutants that 1) impaired or were likely to impair beneficial uses in the Lake, 2) were likely to affect human health or wildlife because they exceed chemical yardsticks, or 3) impair Lake ecosystem objectives. The Stage 1 LaMP summarizes all known data on critical pollutant loadings from point sources throughout the Lake Superior basin.

The Stage 2 LaMP, which was submitted to the IJC in July 1999, sets remediation goals or load reduction schedules for the nine virtual elimination pollutants identified in the Stage 1 LaMP. The Lake Superior Binational Forum stakeholders group submitted pollutant reduction recommendations, which were public and agency reviewed, edited and formed the basis for the final targets set in the Stage 2 LaMP. In Stage 2, the critical pollutants were placed into management categories that reflect pollutant impacts, tendency to bioaccumulative, and occurrence at toxic levels.

The draft Stage 3 LaMP released for public review and comment in November 1999, selects pollutant load reduction strategies and remedial actions with respect to the nine virtual elimination pollutants: mercury, PCBs, dieldrin/aldrin, chlordane, DDT, toxaphene, dioxin, hexachlorobenzene, and octachlorostyrene.

Under the (former) Broader Program, work proceeded in two areas between 1991 and 1998: habitat and nonregulatory special designations. In the program area of habitat, agencies developed ecological criteria for important Lake Superior habitat, set up a database for habitat sites, prepared a comprehensive GIS-based map of important habitat sites and areas, and examined the impact from major dischargers on habitat. In the program area of sustainability, criteria for non-regulatory special designations were developed. One outcome of this work was the Park Canada project to designate a National Marine Conservation Area for one third of the Canadian waters of Lake Superior.

### 1.1.2 Ecosystem Components

While the initial focus of the LaMP work was on the reduction of critical pollutants, establishing the zero discharge demonstration project, and a broader program that advanced our understanding of habitat and landscapes, work has recently begun in other areas as well. The partner agencies have developed LaMP documents for six ecosystem themes: aquatic communities, terrestrial wildlife communities, habitat, human health and developing sustainability. The work in these themes is released for the first time for public comment and review in the LaMP 2000.

Adopting an ecosystem approach has initiated a shift from a narrow perspective of managing environmental media (water, air and soil) or a single resource (e.g., fish, trees) to a broader perspective that focuses on managing human uses and abuses of watersheds or bioregions, and that comprehensively addresses all environmental media and resources within the context of a living system. The Lake Superior LaMP is guided by a set of ecosystem objectives and indicators to judge progress. Published as a discussion paper in 1995, the document ***Ecosystem Principles and Objectives, Indicators, and Targets for Lake Superior*** describes extensive ecosystem objectives and sub-objectives for the six themes of the LaMP. These objectives have been refined and updated since the document's original release and are described in abbreviated form below:

1. General Objective - Human activity in the Lake Superior basin should be consistent with *A Vision for Lake Superior*. Future development of the basin should protect and restore the beneficial uses as described in Annex 2 of the GLWQA.
2. Chemical Contaminants Objective - Levels of persistent, bioaccumulative, and toxic chemicals should not impair beneficial uses of the natural resources of the Lake Superior basin. Levels of chemical contaminants which are persistent, bioaccumulative, and toxic should ultimately be virtually eliminated in the air, water and sediment in the Lake Superior basin. A zero discharge demonstration program is the primary means for achieving reductions of in-basin sources of contaminants.
3. Aquatic Communities Objective - Lake Superior should sustain diverse, healthy, reproducing and self-regulating aquatic communities closely representative of historical conditions.
4. Terrestrial Wildlife Objective - The Lake Superior ecosystem should support a diverse, healthy and sustainable wildlife community in the Lake Superior Basin.
5. Habitat Objective - To protect, maintain and restore high-quality habitat sites in the Lake Superior basin and the ecosystem processes that sustain them. Land and water uses should be designed and located compatible with the protective and productive ecosystem functions provided by these natural landscape features.

6. Human Health Objective - The goal of the Lake Superior LaMP Human Health Chapter is to fulfill the human health requirements of the GLWQA, including: defining the threat to human health and describing the potential adverse human health effects arising from exposure to critical pollutants and other contaminants (including microbial contaminants) found in the Lake Superior basin, addressing current and emerging human health issues of relevance to the LaMP, and identifying implementation strategies currently being undertaken to protect human health and suggesting additional implementation strategies that would enhance the protection of human health.
7. Developing Sustainability - Human use of the Lake Superior ecosystem should be consistent with the highest social and scientific standards for sustainable use, and should not degrade it, nor any adjacent ecosystems. Use of the Basin's natural resources should be consistent with their capability to sustain the ecosystems identity and functions, should not risk the socioeconomic and cultural foundations of any citizens, nor deny any generation the benefits of a healthy, natural Lake Superior ecosystem. The obligation of local communities to determine their future should be incorporated in any policies directed at the management of natural and social resources in the Basin.

*The Ecosystem Principles and Objectives* document also contains a set of preliminary indicators and targets. A revised set of indicators has been developed and will be released in the summer of 2000.

## **1.2 LAMP ACCELERATION AND THE LAMP 2000 DOCUMENT**

### **1.2.1 What is LaMP 2000?**

In May 1999, the Great Lakes States Environmental Directors issued a challenge to the U.S. Environmental Protection Agency (U.S. EPA) that all LaMP documents were to be completed by Earth Day 2000. This challenge was accepted at a meeting of senior managers (the Binational Executive Committee [BEC]) from the U.S. EPA, Environment Canada, the Great Lakes states, the Province of Ontario, and several tribes. A resolution was adopted by the BEC that calls for the completion by April 2000 of a “**LaMP 2000**” document which would reflect the state of the knowledge and progress of the LaMPs at that time (See Addendum A to this chapter). It is expected that the LaMP process will be an iterative process from 2000 forward and that the LaMPs will be updated biennially, with the latest scientific and technical information incorporated into the existing documents.

The LaMP 2000 document serves several purposes. First, it summarizes the technical research and scientific study of the Lake Superior ecosystem. Second, it represents a framework and road map for guiding and supporting priority actions and/or additional research in the basin. Third, the document presents actual pollution prevention,



restoration, and other actions that governments, industries, tribes, and other stakeholders can take to achieve the overall goals and visions of the LaMP. Finally, the document will serve as a strategic plan to help achieve sustainability in the basin ecosystem. This is the first time that comprehensive information and proposed actions for the ecosystem components of the Lake Superior basin have been drawn together and published.

The BEC Resolution calls for the consolidation of the LaMP stages described in the GLWQA into one LaMP document. Accordingly all LaMP themes including the critical pollutants component and the stages for the individual ecosystem components will be placed in a single binder containing information relating to problem identification, targets, actions and monitoring.

### **1.2.2 Action/Projects Matrices**

Each of the LaMP 2000 chemical and ecosystem components contain specific actions and projects that will be taken to help achieve the goals and objectives of the LaMP. Some of these actions already have commitments and funding by various state, federal, provincial or other entities. Other actions are categorized as high priority but still need agency commitment or funding. These actions can be found in the respective chapters in the LaMP 2000 document.

## **1.3 RELATIONSHIP OF THE LAMP TO OTHER INITIATIVES AND EFFORTS**

### **1.3.1 Remedial Action Plans for Areas of Concern**

The GLWQA amendments of 1987 also called for the development of RAPs for designated Areas of Concern. The primary goal of the RAPs is to restore impaired “beneficial uses,” both ecological and cultural, as identified in Annex 2 of the GLWQA amendments, in degraded areas within the basin. The GLWQA amendments directed the two federal governments to cooperate with state and provincial governments to develop and implement RAPs for each AOC. In the Great Lakes basin 43 AOCs have been identified by the U.S. and Canadian governments, 26 in U.S. waters, and 17 in Canadian waters (five are shared between the U.S. and Canada on connecting river systems). Collingwood Harbour, in Ontario, is the first of these 43 sites to be de-listed. There are eight AOCs in the Lake Superior Basin, four in Canada, three in the U.S., and one shared between the two countries along the St. Marys River. Updates and the current status of the Lake Superior RAPs may be found in **Appendix A** of the LaMP.

The RAPs and LaMPs are similar in that they both use an ecosystem approach to assessing and remediating environmental degradation, focus on the 14 beneficial use impairments outlined in Annex 2, and rely on a structured public involvement process. RAPs, however, encompass a much smaller geographic area, concentrating on an embayment, a single watershed or stretch of a river. The main focus of a RAP is on environmental degradation in that specific area, and remediating the beneficial use

impairments locally. Most of the Lake Superior RAPs have had active local Public Advisory Committees (PACs), with stakeholders in some cases undertaking local remediation projects. In most AOCs, the beneficial use impairment, e.g., fish tumors, can be related or connected to local sources. On the other hand, some fish advisories are attributable to the lakewide concentrations of persistent, bioaccumulative toxic chemicals.

Forging a strong relationship between the LaMPs and the RAPs is important to the success of both efforts. The AOCs can, in many cases, serve as point source discharges to the Lake as a whole. Improvements in the AOCs will therefore, eventually help to improve the entire lake. Much of the expertise about the use impairments and possible remedial efforts reside at the local level, cooperation between the two efforts is essential in order for the LaMPs to remove lakewide impairments.

### **1.3.2 Great Lakes Binational Toxics Strategy**

Signed between the U.S. and Canada in 1997, the Binational Toxics Strategy (BTS) helps provide an overall coordinating effort across the lakes to reduce and virtually eliminate persistent toxic substances in the Great Lakes basin. The Binational Toxics Strategy provides a framework for actions to reduce or eliminate persistent toxic substances and establishes reduction challenges in the time frame 1997 to 2006 for twelve Level 1 persistent toxic substances including mercury and PCB's.

This effort is critical to the toxic reduction efforts of the Lake Superior LaMP for several reasons. First, the BTS can work in the national and international arena to address out-of-basin air deposition sources of toxic substances, an increasingly important source of inputs to the Lake. Second, it can help coordinate ongoing toxic reduction efforts across the basin, disseminating critical information on these successful projects. Also, because the BTS effort is closely coordinated with the U.S. national Persistent, Bioaccumulative and Toxic Chemical Initiative at EPA headquarters, the BTS can disseminate the most current national and international scientific information on the Lake Superior critical pollutants. Finally, the ambitious reduction time frames and schedules for virtual elimination of critical pollutants at the basin-wide and national level can help support similar reduction efforts in Lake Superior.

There are positive signs of progress in the Great Lakes. Canada has exceeded it's 90% challenge reduction in the use, generation and release of alkyl-lead and the United States has met the Binational challenge of confirming no-use of alkyl-lead in automotive gasoline. Canada has also met its Level 1 pesticide challenge that there is no longer use or release from sources that enter the Great Lakes basin of five bioaccumulative pesticides (chlordane, aldrin/dieldrin, DDT, mirex, and toxaphene).

### **1.3.3 U.S. Great Lakes Five-Year Strategy**

The U.S. EPA, in conjunction with their State, Federal and Tribal partners, is developing "Great Lakes 2000: A Strategic Plan for the Great Lakes Ecosystem". This Plan will

serve as an overall strategy for committing to and achieving specific environmental goals into the new millennium. The Plan will focus on a host of cross-media, old and emerging issues facing the Great Lakes in the immediate future. The focus will include efforts to address persistent toxic substances, habitat loss and destruction, land use/sprawl, human, terrestrial and wildlife health, invasive species, sustainability, aquatics, and other issues.

## **ADDENDUM 1-A**

### **BINATIONAL EXECUTIVE COMMITTEE CONSENSUS POSITION ON THE ROLE OF LaMPS IN THE LAKE RESTORATION PROCESS**

#### **Binational Executive Committee Consensus Position on the Role of LAMPS in the Lake Restoration Process**

The development and implementation of Lakewide Management Plans (LaMPs) are an essential element of the process to restore and maintain the chemical, physical, and biological integrity of the Great Lakes ecosystem. Through the LaMP process, the Parties, with extensive stakeholder involvement, have been defining the problems, finding solutions, and implementing actions on the Great Lakes for almost a decade. The process has taken much longer and has been more resource-intensive than expected.

In the interest of advancing the rehabilitation of the Great Lakes, the Binational Executive Committee calls on the Parties, States, Provinces, Tribes, First Nations, municipal governments, and the involved public to significantly accelerate the LaMP process. By accelerate, we mean an emphasis on taking action and a streamlined LaMP review and approval process. Each LaMP should include appropriate actions for restoration and protection to bring about actual improvement in the Great Lakes ecosystem. Actions should include commitments by the governments, parties and regulatory programs, as well as suggested and voluntary actions that could be taken by non-governmental partners. BEC endorses the April 2000 date for the publication of "LaMP 2000", with updates every two years.

BEC is committed to ensuring a timely review process and will be vigilant in its oversight.

The BEC respects and supports the role of each Lake Management Committee in determining the actions that can be achieved under each LaMP. BEC expects each Management Committee to reach consensus on those implementation and future actions. Where differences cannot be resolved, BEC is committed to facilitating a decision. BEC recognizes the Four-Party Agreement for Lake Ontario and the uniqueness of the agreed upon binational workplan.

The LaMPs should treat problem identification, selection of remedial and regulatory measures, and implementation as a concurrent, integrated process rather than a sequential one. The LaMPs should embody an ecosystem approach, recognizing the interconnectedness of critical pollutants and the ecosystem. BEC endorses application of the concept of adaptive management to the LaMP process. By that, we adapt an iterative process with periodic refining of the LaMPs which build upon the lessons, successes, information, and public input generated pursuant to previous versions.

LaMPs will adjust over time to address the most pertinent issues facing the Lake ecosystems. Each LaMP should be based on the current body of knowledge and should clearly state what we can do based on current data and information. The LaMPs should identify gaps that still exist with respect to research and information and actions to close those gaps.

*Adopted by BEC on July 22, 1999.*